

FE372

SIDE SCAN

Diagram No. 1210-4

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

Type of Survey . . . Side Scan Sonar
Field No. RU-20-2-92
Registry No. FE-372SS

LOCALITY

State Rhode Island
General Locality . . . Rhode Island Sound
Sublocality Approach to Sakonnet River

19 92

CHIEF OF PARTY
LCDR N.E. Perugini

LIBRARY & ARCHIVES

DATE October 8, 1992

☆U.S. GOV. PRINTING OFFICE: 1985-566-054

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13221
13218
12300

13006 N.C

FE372

HYDROGRAPHIC TITLE SHEET

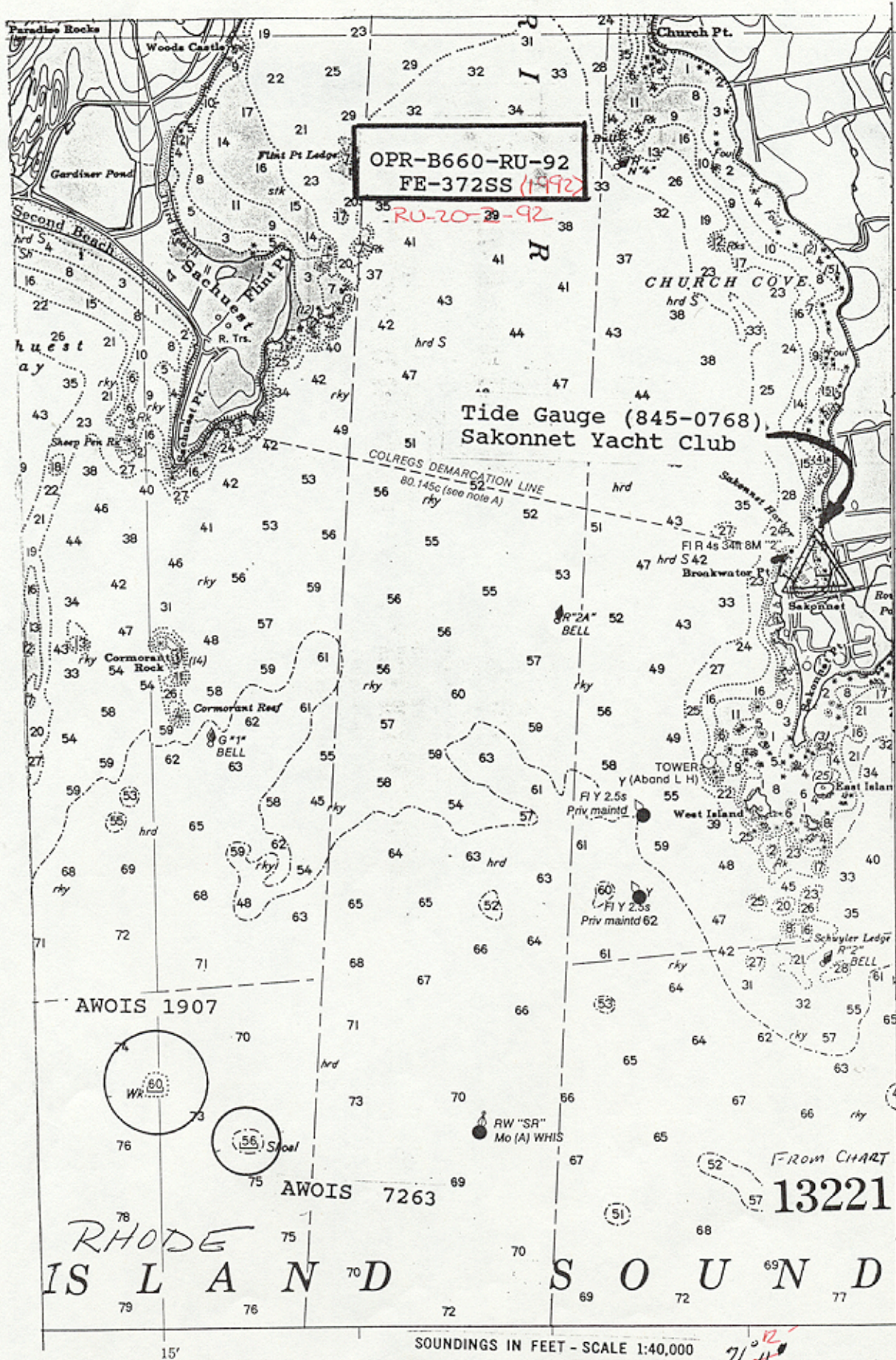
FE-372SS

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form,
filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

RU-20-2-92

State Rhode IslandGeneral locality Rhode Island SoundLocality Approaches to Sakonnet RiverScale 1:20,000Date of survey Apr 3 to Apr 7, 1992Instructions dated February 12, 1992Project No. OPR-B660-RU-92Vessel NOAA Ship RUDE (9040)Chief of party LCDR Nicholas E. PeruginiSurveyed by N.E. Perugini, P.L. Schattgen, M.J. Oberlies, J.A. IllgD.E. WilliamsSoundings taken by echo sounder, pneumatic depth gage EG+G MODEL 260
SIDE SCAN SONARGraphic record scaled by NEP, PLS, MJO, JAI, DEWGraphic record checked by NEP, PLS, MJO, JAI, DEWProtracted by NAAutomated plot by NA (AHS)Verification by NA ATLANTIC HYDROGRAPHIC SECTIONSoundings in meters at MLLWREMARKS: All times are Coordinated Universal Time (UTC)AWOIS Items 1907 and 7263 are addressed in this report.NOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE
PROCESSING.AWOIS/SURF CHECK 10/28/92
MCRRWW 12/8/92



(CONTINUED ON CHART 13228)

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A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU, Southern New England Coast, Connecticut and New York.

A.2 The original date of the instructions is February 12, 1992.

A.3 No changes to the project instructions were issued.
CHANGE NO 1 ISSUED APRIL 2, 1992, APPLIED.

A.4 A sheet letter was not specified in the project instructions.

A.5 Project OPR-B660-RU responds to requests from the Northeast Marine Pilots, Inc., of Newport, Rhode Island, to verify or disprove certain wrecks and obstructions in Long Island, Block Island, and Rhode Island Sounds. The U.S. Navy, as well as state and local governments, have also requested updated bathymetric and hydrographic survey data of the area.

B. AREA SURVEYED

B.1 This survey encompasses two items located approximately 2.5 miles southwest of Sakonnet Point, Rhode Island. These items are identified on the chartlet preceding the table of contents of this descriptive report.

B.2 The approximate limits of this survey are within a one half mile radius of 41° 26' 00" N and 071° 15' 00" W.

B.3 Data acquisition began on April 3, 1992 (DOY 094) and concluded on April 7, 1992 (DOY 098).

C. SURVEY VESSELS

C.1 The following vessels were used during this project:

<u>VESSELS</u>	<u>ELECTRONIC DATA PROCESSING NUMBER</u>	<u>PRIMARY FUNCTION</u>
NOAA Ship RUDE (S590)	9040	Hydrography/ Side Scan Operations
RUDE Launch (RU3)	1290	Diving Operations

C.2 No unusual vessel configurations or problems were encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

D.1 Survey data acquisition and processing were accomplished using the HDAPS system with the following software versions:

Program	Version	Dates Used
SURVEY	6.10	April 3 - 7
DAS_SURV	6.20	April 3 - 7
POSTSUR	5.20	March 3 - 7

D.2 Other software includes VELOCITY 1.11 dated March 9, 1990 used to generate sound velocity corrector tables, and MTEN (dated between 1985 and 1986) for horizontal control verification and establishment.

D.3 There were no nonstandard automated acquisition or processing methods used.

E. SONAR EQUIPMENT

E.1 Side scan sonar operations were conducted using an EG&G Model 260 slant range corrected side scan sonar recorder and a Model 272-T (single frequency) towfish. All side scan operations were conducted from the RUDE (vessel # 9040). The following list shows equipment serial numbers and corresponding dates used:

Equipment Type	Serial Number	Dates Used
Recorder	0012104	Entire Survey
Towfish	11908 (Single Freq)	Entire Survey

E.2 The side scan sonar towfish was configured with a 20° beam depression, which is the normal setting and which yields the best beam correction.

E.3 The 100 Khz frequency was used throughout this survey.

E.4 a)

AWOIS 1907: The 100 meter range scale was used for the initial search for this contact. Once located, the 50 meter range scale was used for three lines of further investigation and the 75 meter range scale used for one line of further investigation. After a dive investigation of this contact, two more passes were made in the search radius at the 100 meter range scale to complete 100% side scan sonar coverage.

AWOIS 7263: Only the 100 meter range scale was used for this item.

The current FPM specification was used to determine maximum line spacing:

$$LS_{max} = 2RS - 2ECR_{max}$$

where RS = range scale (100m)
and ECR = error circle radius

Predicted ECR values were generated using the HDAPS function "Predict ECR" for control station configurations used in this survey. No predicted ECR value was greater than 7 meters for the entire survey area. Thus the maximum line spacing computed by the above equation was 186 meters. RUDE used a 170 meter line spacing which yielded an effective swath overlap of 30 meters. Printouts of "Predict ECR" values supporting the above calculation are included in SEPARATE V.*
*DATA FILED WITH FIELD RECORDS.

b) Confidence checks were obtained by noting recognizable bottom characteristics at the edges of the sonar range scale in use.

c) Refer to section "N", the individual AWOIS descriptions, for side scan sonar coverage.

d) No other factors affected side scan sonar operations or the quality of the sonar records.

e) The towfish was deployed from the stern during the entire survey.

E.5 Contacts that were suspected of being the object of the AWOIS investigation were investigated by echosounder development and multiple side scan sonar passes. There was one diver investigation conducted during this survey. Refer to section N.5 of the individual AWOIS discussions for specific contact development procedures.

E.6 Overlap was checked on-line using the real-time plot and the edited swath plot for holidays. There were no holidays requiring additional side scan sonar coverage.

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon 6000N Digital Survey Fathometer (DSF). One DSF 6000N was used during the entire survey: S/N B050N.

F.2 One diver investigation was conducted during this survey. Divers determined a least depth on AWOIS 1907. The least depth was measured with a 3-D Instruments, Inc. precision direct drive depth gauge:

0- 70 fsw (feet salt water)

S/N 201637

Calibration and check documentation for this equipment is on file with the Atlantic Hydrographic Section. DATA FILED WITH FIELD RECORDS.

F.3 There were no faults in soundings equipment that affected the accuracy/quality of the data.

F.4 Both the high (100 kHz) and low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were plotted.

G. CORRECTIONS TO SOUNDINGS

G.1 a) The velocity of sound through water was determined using a Digibar Sound Velocity Probe (S/N 169), made by Odom. A Data Quality Assurance Test was conducted before the velocity cast to ensure the meter was within tolerance.

All data were processed using Velocity 1.11 software. The computed velocity correctors were entered into the HDAPS sound velocity table and applied on-line to both high and low frequency soundings. The sound velocity correctors applied to this survey are based on the cast recorded on the following date:

Cast Number	Date	Latitude	Longitude	HDAPS Table #	Applied to Days
01	4-6-92	41° 24.8' N	71° 19.0' W	01	094-098

b) There was no variation in the DSF-6000N instrument initial.

c) No instrument correctors to the DSF-6000N were required.

d) A dual lead line comparison with the DSF-6000N was made in the project area.

April 6, 1992 at 41° 26.0' N 71° 15.0' W (75 ft depths)

The greatest variation between leadline and DSF soundings was 0.2 meters. Considering the ship's motion and the wire angle in the leadline from current (approximately 5°), this is excellent agreement and provides an adequate check that the echosounder was functioning properly. Data from these comparisons is on file with the Atlantic Hydrographic Section. DATA FILED WITH FIELD RECORDS.

Both of the leadlines used in the leadline to DSF 6000 comparison were calibrated by steel tape prior to the above comparison. An average leadline correction of -0.3 feet was applied in comparisons between the DSF-6000 and the ship's leadlines.

e) All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) DSF 6000N beams.

f) During the winter 1988 dry dock period, an exact vertical measurement was taken from the DSF transducer to a fixed point on the bridge wing. After the ship was re-floated, the height above the waterline was determined for this point. The ship's static draft was thereby calculated to be exactly 2.26 meters (7.4 feet). This draft value was applied to the sounding data via the HDAPS offset table.

g) Settlement and squat correctors for the RUDE were determined on the Elizabeth River, Norfolk, Virginia on March 13,

1991. An observer, stationed with a level on a pier, measured changes in relative height by sighting to a staff held at the longitudinal position of the ship's transducer. The ship steamed directly toward and then away from the observer. The toward and away runs were averaged and applied to soundings through the HDAPS offset table.

h) Heave data were acquired by a Datawell heave, roll and pitch sensor (S/N 19128-C), and were applied to soundings in real time. Only the heave corrections were applied to the plotted soundings.

This data is on file with the Atlantic Hydrographic Section. DATA FILED WITH FIELD RECORDS.

G.2 There were no unusual or unique methods or instruments used for correcting echo soundings.

G.3 The sound velocity correctors resulting from velocity cast #1 was acquired after the start of data acquisition. These correctors were reapplied to data acquired without the use of a velocity corrector.

G.4 The ship's shallow water (0-70 fsw) pneumatic depth gauge was calibrated on January 16, 1992. This gauge was bought new prior to the start of the 1992 field season and calibrated by the manufacturer. Corrector data from the calibration was not applied to pneumatic depths because it was less than 0.1 meters.

G.5 Generally, sea conditions greater than one meter affected the sounding record, creating a trace of constant peaks and dips. Application of heave correctors to raw echo soundings appeared to accurately represent true depths.

G.6 a) The tidal datum for this project is Mean Lower Low Water. The operating tide station at Newport, Rhode Island (845-2660) served as direct control for datum determination. This station also served as the reference station for predicted tides. Data for predicted tides were provided on floppy magnetic disk before the start of the project.

b) Tidal data used during data acquisition were obtained from Table 2 of the East Coast of North and South America Tide Predictions, and applied to the digital tide data using the HDAPS software.* The subordinate station for predicted tides was:

* APPROVED TIDES APPLIED DURING OFFICE PROCESSING.

NO.	PLACE	TIME		HEIGHT	
		High water	Low water	High water	Low water
1149	Sakonnet	-0 13	-0 01	*0.88	*0.86

Tidal correctors were applied on-line using the HDAPS predicted tide table number 4.

c) Zoning for this project is consistent with the project instructions.

A request for smooth tides was mailed on April 7, 1992.*
* APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING.

H. CONTROL STATIONS SEE ALSO SECTION 2.9. OF THE EVALUATION REPORT.

H.1 The horizontal datum for this project is the North American Datum of 1983 (NAD 83).

H.2 The list of Horizontal Control Stations is located in Appendix III.

H.3 No horizontal control stations were established for this survey. Existing NGS stations were used. All horizontal control stations used during this survey are third-order with the exception of Beavertail Lighthouse Offset.

H.4 All horizontal control stations are within NGS Quadrant N0410712. All are referenced to the NAD 83 Horizontal Datum.

H.5 See Appendix III for the letter addressing horizontal control submitted for this project. DATA FILED WITH FIELD RECORDS.

H.6 There are no photogrammetric problems, positioning problems or unconventional survey methods pertinent to this survey.

I. HYDROGRAPHIC POSITION CONTROL

I.1 This survey was conducted entirely with the use of the Falcon Mini-Ranger system.

I.2 Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual (FPM).

I.3 Control Equipment:

Mini-Ranger:

Falcon 484 by Motorola Inc.

Serial Numbers:

RPU	F-0246	
R/T	F-3409	
R/S:	F-3222	(code 4)
	F-3296	(code 5)
	F-3217	(code 9)

I.4 Calibration procedures for the positioning system is as follows:

As stated in section 3.1.3.3 of the Field Procedures Manual for Hydrographic Surveying, a continuous critical system check is obtained "when data are acquired with three or more LOP's and ECR and maximum residual criteria are being met as required in section 3.1.3.1" (of the same manual). RUDE routinely conducted survey operations using at least three LOP's, and all other positioning criteria were met as required (see section I.2).

A pre-project baseline calibration of the Mini-Ranger system was conducted in Newport, Rhode Island on March 30, 1992. This data is on file with the Atlantic Hydrographic Section. DATA FILED WITH FIELD RECORDS.

I.5 The Falcon system required calibration data to be applied to raw ranges. The range corrector and minimum acceptable signal strength (MASS) for each Mini-Ranger Reference Station was entered into the HDAPS system using the Pre-Survey C-O Table. This table provided the mechanism by which HDAPS automatically applies the proper range corrector and removes from the position computation those LOP's with signal strengths below MASS. Overall, calibration data applied to the raw Mini-Ranger ranges was adequate and effective.

I.6 a) There were no unusual methods used to calibrate or operate the electronic positioning equipment.

b) There were no occurrences of equipment malfunctions or substandard operation.

c) There were no occurrences of unusual atmospheric conditions that may have affected data quality.

d) There were no occurrences of weak signals or poor geometric configurations of a duration to significantly compromise data quality.

e) No systematic errors were detected that required adjustments.

f) Antenna positions were corrected for offset and layback, and referenced to the position of the DSF 6000N transducer. These correctors were located in the HDAPS Offset table, and applied on-line to the positioning algorithm. Offset table 1 is on file with the Atlantic Hydrographic Section. DATA FILED WITH FIELD RECORDS.

g) Offset and layback distances for the A-frame (tow point) were located in the HDAPS Offset table and applied on-line. These offsets, along with the cable length, towfish height, and depth of water, were used by the HDAPS system to compute the position of the towfish. Offset table 1 is on file with the Atlantic Hydrographic Section. DATA FILED WITH FIELD RECORDS.

J. SHORELINE SEE SECTION 2.B. OF THE EVALUATION REPORT.

No field sheets encompassed any shoreline.

K. CROSSLINES SEE SECTION 3.9. OF THE EVALUATION REPORT.

AWOIS 1907: Insufficient data were acquired to facilitate a comparison of mainscheme to crossline soundings.

AWOIS 7263: This item underwent very limited side scan sonar coverage. However, extensive echosounder development provided many opportunities for a comparison of mainscheme to crossline soundings. These comparisons show close agreement between soundings, generally within 0.3 meters.

L. JUNCTIONS SEE SECTION 5. OF THE EVALUATION REPORT.

This survey does not junction with any current surveys.

M. COMPARISON WITH PRIOR SURVEYS SEE SECTION 6. OF THE EVALUATION REPORT.

This section is to be addressed by the Atlantic Hydrographic Section.

N. COMPARISON WITH THE CHART SEE ALSO SECTION 7. OF THE EVALUATION REPORT.

NOTE: Paragraphs N.11 and N.12 are not discussed in this section. Refer to section M.3 for comparisons with prior surveys and chart 12224.

AWOIS 1907

N.1 The object of this investigation is a fishing trawler that was reported sunk in March, 1940. The AWOIS listing for this item indicates that the fishing vessel was searched for by wire drag in the position it was reported to ~~of~~ ^{HAVE} sunk. The accuracy of that originally reported position was one mile. The wreck was not found during that survey and the item was recommended to be deleted from the chart. During that same wire drag survey an obstruction was found nearby. It was cleared to 60 feet and assumed to be a wreck. In fact, it was assumed to be the fishing vessel that was originally the object of their investigation.

N.2 Item Location

Geographic position provided was: 41° 25' 56.77" N (NAD83)
71° 14' 59.96" W

N.3 Source of Item

Notice to Mariners 14/49.

N.4 Largest Scale Chart Affected

Chart 13221, scale 1:40,000, edition 47 dated March 23, 1991.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 200 meter search radius. A diver investigation was also required, if appropriate.

This item was found on the first side scan sonar pass. Further reconnaissance was completed on the 50 meter range scale and the decision was made to conduct a dive investigation on this item.

This item was found to be two very large boulders, rather than a wreck, during the dive investigation. The divers conducted a routine diver investigation and least depth determination by use of a pneumatic depth gauge. Afterwards, realizing that finding boulders instead of a suspected wreck would require further investigation to support this claim, more side scan sonar coverage was conducted on this item. One hundred percent of side scan sonar coverage was completed without finding anything resembling a wreck. In fact, the boulders that the divers investigated were the only contacts of appreciable size found within the search radius.

N.6 Investigation Results

A least depth for this item was determined by diver investigation. Least depth information for this item is as follows:

FIX	16
LATITUDE	41° 25' 58.34 ⁶ " N
LONGITUDE	71° 15' 00.41" W
LEAST DEPTH (MLLW)	19.7 meters (64.6 feet)

LORAN Coordinates:

Master 9960	W-14366.7	X-25716.9	Y-43966.8	Z-60168.3
SNR: 875	850	941	820	468

N.7 Explanation for Position Difference

The position difference is insignificant.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

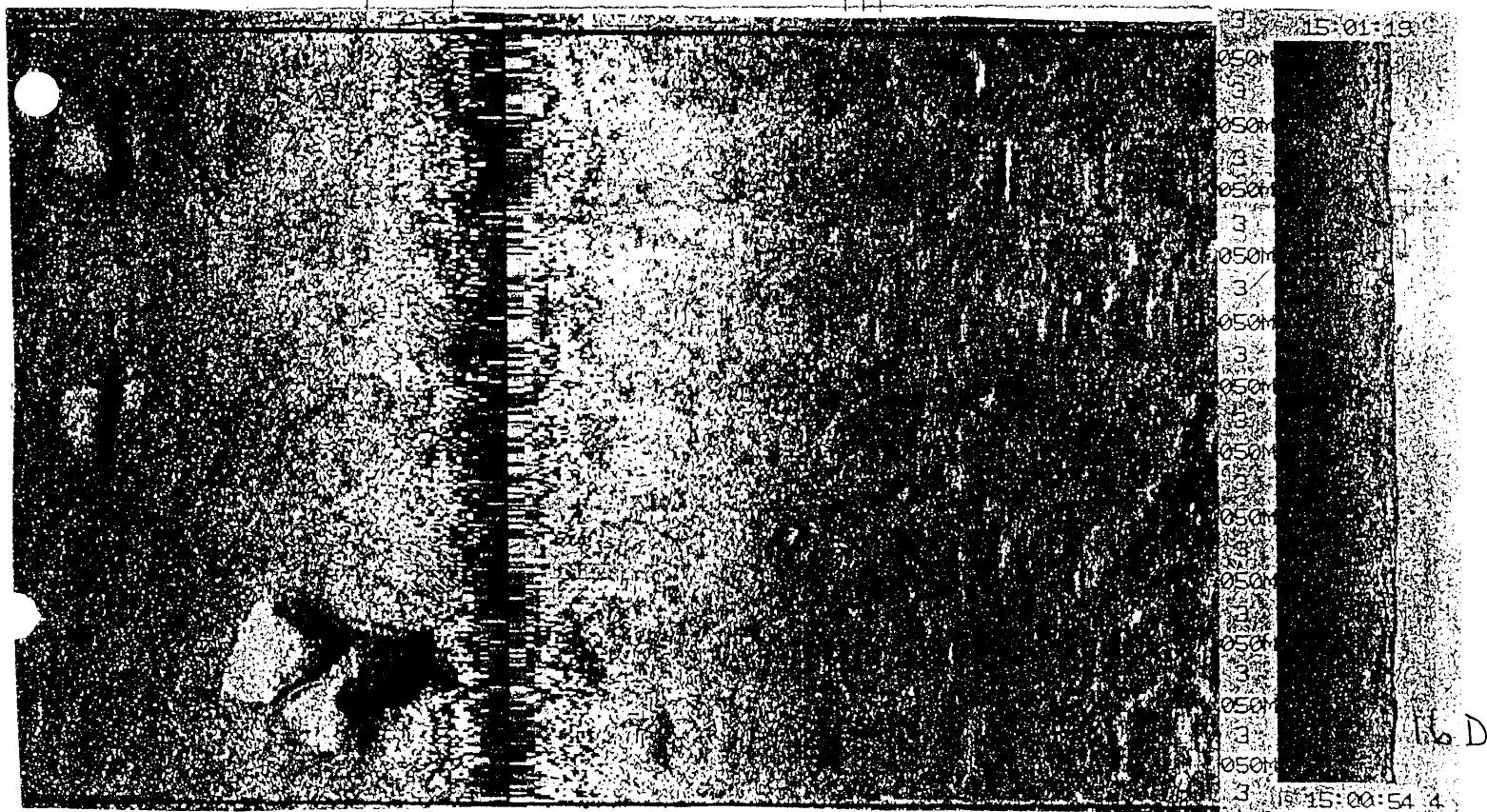
Delete the presently charted wreck ^{LABEL}symbol and 60-foot ^{CLEARANCE}least depth determined by wire drag. CONCUR

Chart a ^{ROCK}boulder with a ^{LEAST}depth of 64 feet (19.7m) AND A DANGER CURVE ~~based on the above survey data.~~ (197RK), IN PRESENT SURVEY LOCATION. *

N.10 Danger to Navigation Report

None submitted.

* IF THE FISHING VESSEL (TRAWLER), REPORTED BY NM 14/49
EXISTS, IT IS NOT IN THE AREA OF THIS SURVEY.



AWOIS 7263

N.1 The object of this investigation was suspected to be either a shoal or obstruction. It was found during a wire drag investigation, hung at 60 feet, but cleared at 56 feet.

N.2 Item Location

Geographic position provided was: 41° 25' 43.57" N (NAD 83)
71° 14' 31.16" W

N.3 Source of Item

Survey FE194WD/63 (FE1/64WD)

N.4 Largest Scale Chart Affected

Chart 13221, scale 1:40,000, edition 47 dated March 23, 1991.

N.5 Investigation Procedures

Survey requirements called for 400% side scan sonar coverage in conjunction with echosounder development in a 200 meter search radius. A diver investigation was also required, if appropriate.

One hundred percent side scan sonar coverage was completed on this item. After completion of this coverage, three significant contacts, actually what appeared to be three distinct peaks, were selected for further investigation by echosounder investigation. This investigation was conducted in a mainscheme (North-South) direction with 15 meter line spacing. The entire search radius was not subjected to that coverage. Only the area of the three peaks received intensive investigation.

On a later date more echosounder investigation was conducted on the area of the three peaks. This time the coverage was conducted in a crossline (East-West) direction. The echosounder investigation progressed to the northern border of the area of interest with 20 meter line spacing. Then the lines were offset by 10 meters and the investigation progressed to the southern border of the area of interest with 20 meter line spacing. This provided for an effective 10 meter line spacing over the area.

N.6 Investigation Results

Least depth by echosounder development:

FIX	283.3
LATITUDE	41° 25' 45.8 ⁸ / ₉ " N
LONGITUDE	71° 14' 32.3 ¹ / ₀ " W
LEAST DEPTH (MLLW)	18. ⁷ / ₈ meters (61. ⁶ / ₃ feet)

N.7 Explanation for Position Difference

The position difference is insignificant.

N.8 Least Depth Information

See Section "N.6".

N.9 Charting Recommendation

Delete the presently charted shoal ^{LABEL} and 56-foot ^{CLEARANCE} ~~least~~ depth
determined by wire drag. CONCUR

Chart a boulder with a depth of 62 feet ^{1 (18.7m)} ~~based on the above survey~~
~~data.~~ (187RK), IN PRESENT SURVEY LOCATION.

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

RU-20-2-92 AWOIS ITEM 1907
DIVE INVESTIGATION REPORT

DATE: 04 APRIL 92 DOY: 097 TIME: 1523Z

PERSONNEL:

DIVEMASTER\TENDER- LT SCHATTEGEN DIVERS- LTJG OBERLIES

COXSWAIN\TENDER- J. BRAWLEY - ENS ILLG

VISIBILITY: 10 FEET CURRENT: 1 KNOT

MAXIMUM DEPTH: 24.0 METERS BOTTOM TIME: 16 MIN.

METHOD OF POSITION DETERMINATION: DETACHED POSITION

HDAPS POSITION: FIX 16

EASTING: 156955.6 NORTHING: 270141.2

LATITUDE: 41-25-58.34 N LONGITUDE: 71-15-00.41 W

AVERAGE LEAST DEPTH BY PNEUMATIC DEPTH GAUGE: 20.5 METERS

TIME OF READING: 1523Z

PNEUMATIC DEPTH GAUGE CORRECTOR: 0.0

^{APPROVED}
~~PREDICTED~~ TIDAL ZONE CORRECTOR: -0.8

LEAST DEPTH DETERMINED @MLLW 19.7 METERS 64.6 FEET

NARRATIVE REPORT: The object of this investigation was expected to be a wreck. Instead, the item was actually two very large boulders with a smaller boulder nearby. The boulders themselves were unremarkable in that they were rounded, covered with marine growth and stood alone on an otherwise flat bottom. A least depth was determined on the shoalest point of the largest boulder. It was determined by three consecutive readings with a pneumatic depth gauge. This least depth was determined to be 20.5 (67.2 feet) meters at the time of the survey. Diver's depth gauges found this same point to be 69 feet (21.0 meters).

O. ADEQUACY OF SURVEY

O.1 All items investigated during this survey have been addressed.

O.2 There are no parts of the survey that are considered incomplete or substandard.

P. AIDS TO NAVIGATION SEE SECTION 7.C. OF THE EVALUATION REPORT.

P.1 The RUDE conducted no correspondence with the U.S. Coast Guard regarding floating aids to navigation.

P.2 No aids to navigation were investigated for positioning during this survey.

P.3 No aids not already listed in the Light List were located during this survey.

P.4 No bridges, overhead cables or overhead pipelines are located within the survey area.

P.5 No submarine cables, pipelines or ferry routes are located within the survey area.

P.6 No ferry terminals are located within the survey area.

Q. STATISTICS

Q.1	a) Number of positions	66
	b) Lineal nautical miles of sounding lines	
	-nautical miles of survey with the use of the side scan sonar	2.1
	-nautical miles of survey without the use of the side scan sonar	3.1
Q.2	a) square nautical miles of hydrography	0.1
	b) days of production	3
	c) detached positions	1
	-one for diver investigation	
	d) bottom samples	0
	e) tide stations	1
	f) current stations	0
	g) velocity casts	1
	h) magnetic stations	0
	i) XBT drops	0

R. MISCELLANEOUS

R.1 a) No evidence of silting was found during this survey.

b) No evidence of unusual submarine features was found during this survey.

c) No evidence of anomalous tidal conditions was found during this survey.

d) The tidal current tables for the area predict currents to be generally one knot. Observations by divers concur with this.

e) No evidence of magnetic anomalies was found during this survey.

R.2 Bottom samples were not required for this project.

S. RECOMMENDATIONS

S.1 No survey inadequacies have been noted.

S.2 The RUDE is aware of no construction or dredging that will affect results of this survey.

S.3 No further investigation of the survey area is recommended.

T. REFERRAL TO REPORTS

No other reports have been submitted in conjunction with this survey.

CONTROL STATIONS as of 6 Apr 1992

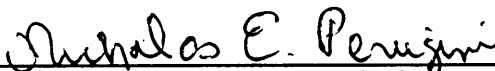
No	Type	Latitude	Longitude	H Cart	Freq	Vel	Code	MM/DD/YY	Station Name
121	F	041:26:57.711	071:23:57.797	20 ⁴ 250	0.0	0.0	9	04/01/92	BEAVERTAIL LIGHT OFFSET, 1991
130	F	041:28:37.723	071:14:27.579	17 250	0.0	0.0	4	04/02/92	SACHUEST, 1940
131	F	041:27:40.811	071:10:19.818	19 250	0.0	0.0	5	04/02/92	WARREN RESET, 1940

APPENDIX VII. APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. FE-372SS

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for charting.



Nicholas E. Perugini, LCDR NOAA
Commanding Officer
NOAA Ship RUDE



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: July 17, 1992

MARINE CENTER: Atlantic

OPR: B660-RU-92

HYDROGRAPHIC SHEET: FE-372SS

LOCALITY: Rhode Island, Rhode Island Sound, Entrance to
Sakonnet River

TIME PERIOD: April 3 - April 7, 1992

TIDE STATION USED: 845-0768 Sakonnet Yacht Club, Rhode Island
Lat. $41^{\circ} 27.9'N$ Lon. $71^{\circ} 11.6'W$

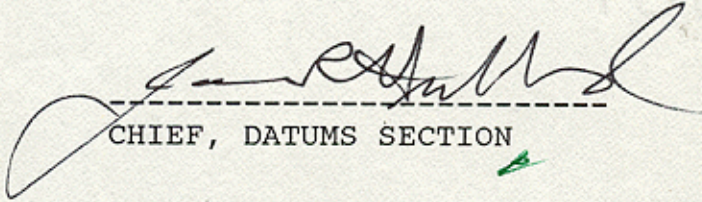
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 8.13 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.3 ft.

REMARKS: RECOMMENDED ZONING

East of $71^{\circ} 23.0'W$ Longitude, west of $71^{\circ} 0.0'W$ Longitude, south
of $41^{\circ} 30.0'N$ Latitude and north of $41^{\circ} 18.0'N$ Latitude, times are
direct and apply a x0.92 range ratio to Sakonnet Yacht Club, Rhode
Island (845-0768).

Note: Times are tabulated in Eastern Standard Time.


CHIEF, DATUMS SECTION

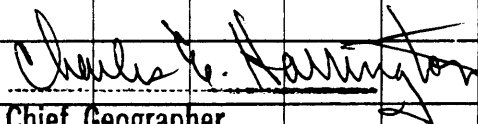


GEOGRAPHIC NAMES

FE-372 SS

Name on Survey	13221 13218										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST			
RHODE ISLAND (title) X										1	
RHODE ISLAND SOUND (title) X										2	
SAKONNET RIVER (title) X										3	
										4	
										5	
										6	
										7	
										8	
										9	
										10	
										11	
										12	
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										21	
										22	
										23	
										24	
										25	

Approved: .



Chief Geographer

JUN 29 1992

N/CG244-74-92

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU
BY (Check):☐ ORDINARY MAIL☐ AIR MAIL☐ REGISTERED MAIL☐ EXPRESS☐ GBL (Give number) _____

EXPRESS MAIL

DATE FORWARDED

28 Sep 1992

NUMBER OF PACKAGES

1 Box

TO:

Chief, Data Control Section, N/CG243
NOAA/National Ocean Service
Room 151, WSC-2, 6015 Executive Blvd.,
Rockville, Maryland 20852

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-372SS

Rhode Island, Rhode Island Sound,
Approach to Sakonnet River

Pkg. 2 Box

- ✓ Original Descriptive Report containing 2 Final Smooth Sheets in Descriptive Report
- ✓ Envelope containing 2 final position overlay plots, 3 excess sounding overlay plots, and 4 final field sheet plots
- ✓ Accordion file containing Echograms, Side Scan Sonargrams, Data Printouts, for VESNO 9040 for JD's--94-98
- ✓ Binder containing Data removed from original Descriptive Report
- ✓ Cahier containing FINAL POSITION PRINTOUT and FINAL SOUNDING PRINTOUT
- ✓ Envelope containing Supplemental Data

FROM: (Signature)

Norris A. Wike

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Section, N/CG24411
439 W. York Street
Norfolk, VA 23510-1114

D. S. Clark
10/8/92

09/25/92

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-372SS

NUMBER OF CONTROL STATIONS	3
NUMBER OF POSITIONS	106
NUMBER OF SOUNDINGS	356

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	93	05/01/92
VERIFICATION OF FIELD DATA	21	09/10/92
ELECTRONIC DATA PROCESSING	9	
QUALITY CONTROL CHECKS	17	
EVALUATION AND ANALYSIS	26	09/15/92
FINAL INSPECTION	2	09/11/92
TOTAL TIME	168	
ATLANTIC HYDROGRAPHIC SECTION APPROVAL		09/15/92

**COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT**

SURVEY NO.: FE-372SS

FIELD NO.: RU-20-2-92

Rhode Island, Rhode Island Sound, Approach to Sakonnet River

SURVEYED: 3 April through 7 April 1992

SCALE: 1:20,000

PROJECT NO.: OPR-B660-RU

SOUNDINGS: RAYTHEON DSF 6000N Fathometer, EG&G Model 260 Side Scan Sonar, and Pneumatic Depth Gauge

CONTROL: MOTOROLA Falcon Mini-Ranger (Range/Range)

Chief of Party.....N. E. Perugini

Surveyed by.....P. L. Schattgen
.....M. J. Oberlies
.....J. A. Illg
.....D. E. Williams

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

a. The purpose of this survey was to verify or disprove Automated Wreck and Obstruction Information System (AWOIS) items #1907 and #7263.

b. Automated Wreck and Obstruction Information System item #7263, a charted shoal cleared 56 ft (17 meters) was investigated during the present survey. The area was determined to be a boulder field. The field unit performed a 100% side scan sonar investigation within a 200 meters search radius. The requirements were for a 400% side scan sonar investigation. A discussion with Steve Verry, NCG/241, (301)-443-8752, September 11, 1992, on the nature of the area has allowed the requirement to be reduced to a 100% side scan sonar investigation. See section N., pages 17-20 of the Descriptive Report for charting recommendations.

c. This is a side scan sonar survey. A RAYTHEON DSF-6000N Fathometer was operated concurrently with the side scan sonar.

d. Two (2) 1:5,000 scale page size smooth plots were generated during office processing and are attached to this report. The data is portrayed at 1:5,000 scale for the sake of clarity. The survey meets 1:20,000 scale positioning accuracy standards.

- e. No unusual problems were encountered during office processing.
- f. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

- a. Control is adequately discussed in sections H. and I. of the Descriptive Report.

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth plots have been annotated with ticks showing the computed mean shift between the survey datum and the North American Datum of 1927 (NAD 27). To place this survey on the NAD 27 datum move the projection lines 0.373 seconds (11.508 meters or 2.30 mm at the scale of the survey) north in latitude, and 1.831 seconds (42.518 meters or 8.50 mm at the scale of the survey) east in longitude.

- b. There is no shoreline within the limits of the present survey.

3. HYDROGRAPHY

- a. Where applicable, soundings at crossings are in excellent agreement and comply with the criteria found in sections 4.6.1. and 6.3.4.3. of the HYDROGRAPHIC MANUAL.
- b. Where applicable, the standard or supplemental depth curves could be drawn in their entirety.
- c. The development of the bottom configuration and determination of least depths of items located and shown on the smooth plots is considered adequate.

4. CONDITION OF SURVEY

The smooth plots and accompanying overlays, hydrographic records and reports conform to the requirements of the HYDROGRAPHIC MANUAL and the FIELD PROCEDURES MANUAL.

5. JUNCTIONS

There are no contemporary junctional surveys or junctional requirements in the Project Instructions.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-6444 (1939) 1:40,000

The prior survey listed above covers the search areas of the present survey. The prior survey shows a general trend of being 0³ meters shoaler than present survey soundings. This may be attributed to differences in technology of the sounding equipment rather than change.

The present survey is adequate to supersede the above prior survey within the common areas.

b. Wire Drag

H-4006WD (1917) 1:20,000

FE-194WD (1964) 1:20,000, 1:40,000, 1:80,000

There are no hangs or groundings common to survey H-4006WD (1917) and the present survey. There are no conflicts between effective depths of survey H-4006WD (1917) and the present survey soundings.

There are two (2) groundings that originate with FE-194WD (1964) and fall within an area common to the present survey. The groundings have been assigned AWOIS items #1907 and #7263 and are adequately discussed in section N., pages 15-18, of the Descriptive Report. There are no conflicts between effective depths of survey FE-194WD (1963) and the present survey soundings.

The present survey is adequate to supersede the above prior surveys within the common areas.

7. COMPARISON WITH CHART 13218 (31st. Ed., 11 Jan. 1992) 13221 (47th. Ed., 23 Mar. 1991)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and require no further consideration. The hydrographer makes adequate chart comparisons in section N. of the Descriptive Report. The following should be noted:

The present survey is adequate to supersede the

charted hydrography within the common areas.

b. Dangers to Navigation

There were no dangers to navigation submitted by the unit on this survey. No dangers were noted during office processing.

c. Aids to Navigation


No aids to navigation were investigated during this survey and there are no aids charted in the survey area.

8. COMPLIANCE WITH INSTRUCTIONS


This is an excellent survey and complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

No additional work is required.



Maxine Fetterly, Cartographic Technician



Norris A. Wike, Cartographer

RUDE Processing Team
Verification and Evaluation & Analysis

APPROVAL SHEET
FE-372SS

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

R. D. Sanocki
R. D. Sanocki
Chief, Hydrographic Processing Unit
Atlantic Hydrographic Section

Date: 9-15-92

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Christopher B. Lawrence
Christopher B. Lawrence, CDR, NOAA
Chief, Atlantic Hydrographic Section

Date: 9-15-92

Final Approval:

Approved: J. Austin Yeager
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic
Survey

Date: 12/3/92

LAT 41:26:00



LAT 41:25:45

LON 71:15:15

LON 71:15:00

LON 71:14:45

2.4 MILES SOUTH
OF SACHUEST POINT

DIVER LEAST DEPTH
19.7 M
POS. 16 (D.P.)
BOULDER

RU-20-2-92 FE-372 SS
RHODE ISLAND
RHODE ISLAND SOUND
APPROACHES TO SAKONNET RIVER
3 APRIL 1992
SCALE: 1:5000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983

AWOIS 1907

SEE SMOOTH SHEET 1 OF 2

LAT 41:25:45

LAT 41:25:30



LON 71:14:45

LON 71:14:30

LON 71:14:15

2.6 MILES SOUTH OF
SAKONNET POINT

SHOAL LEAST DEPTH
18.8 M
FIX 283.3
(ECHO SOUNDER)

RU-20-2-92 FE-372 SS
RHODE ISLAND
RHODE ISLAND SOUND
APPROACHES TO SAKONNET RIVER
6 APRIL 1992
SCALE: 1:5000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983

AWOIS 7263
"CHARTED SHOAL"

SEE SMOOTH SHEET 2 OF 2

71° 15' 15"

71° 15' 00"

71° 14' 45"

41° 26' 15"

22⁹22⁹22⁹22⁷23⁴

23

23

23²22⁸22⁷22⁵ RK

23

41° 26' 00"

23¹23¹

23

23

22⁹22⁸22⁷22⁸23²23¹

23

22⁹22⁸22⁸23²22⁹22⁸23²

23

23

23⁵23⁶23³

23

23

23²23²23³23¹22⁹23³22⁸22⁷

23

23³23¹

71° 15' 15"

41° 25' 45"

NAD 27

XYNETICS 1201

NAW 9/11/92

41° 25' 45"

FE-372SS

RHODE ISLAND

RHODE ISLAND SOUND

APPROACH TO SAKONNET RIVER

DATE OF SURVEY: 3 APR 1992 TO 7 APR 1992

SCALE: 1:5000

SOUNDINGS IN METERS AT MLLW

HORIZONTAL DATUM: NAD 1983

SHEET 1 OF 2

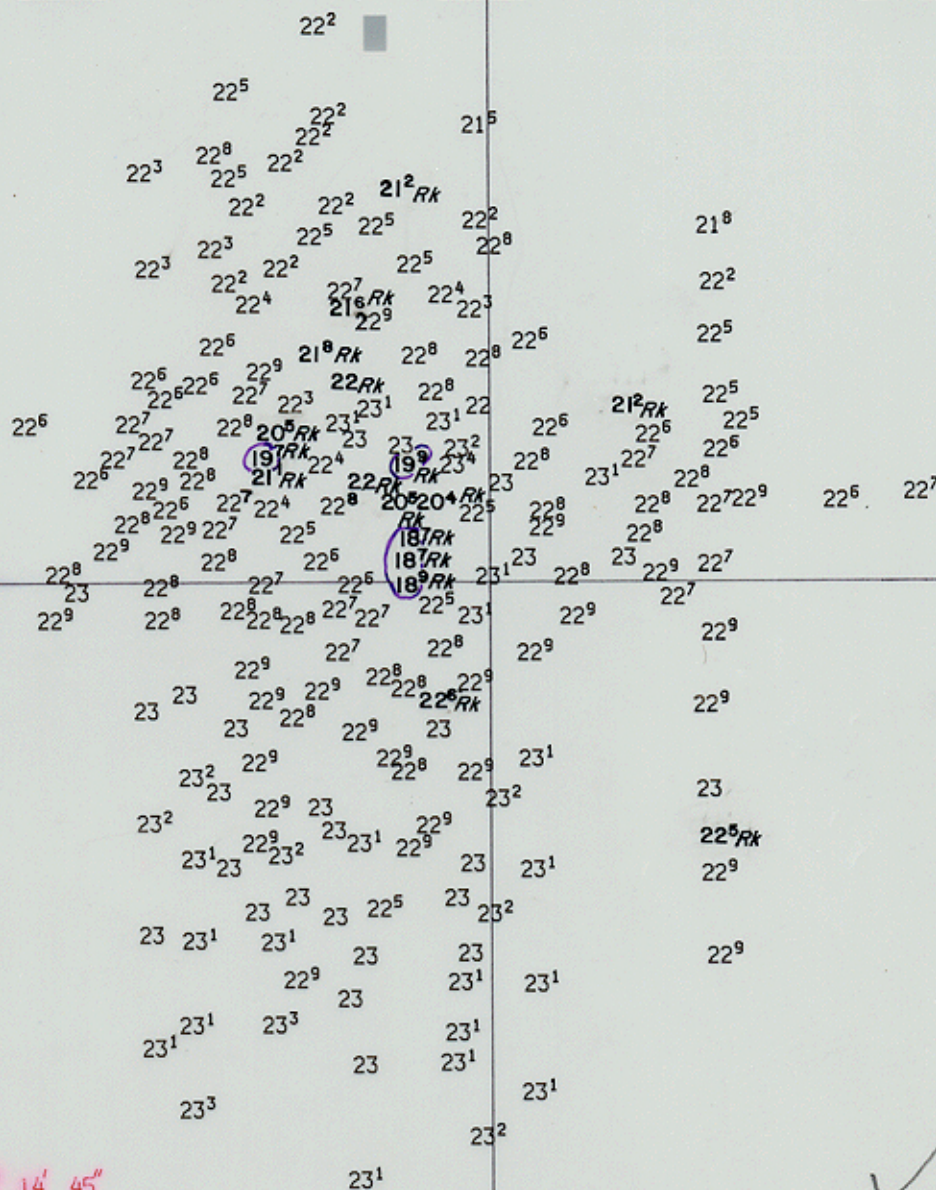
AWOIS ITEM NUMBER 1907

71° 14' 45"

71° 14' 30"

71° 14' 15"

41° 26' 00"



71° 14' 45"

41° 25' 30"

NAD 27

XYNETICS 1201

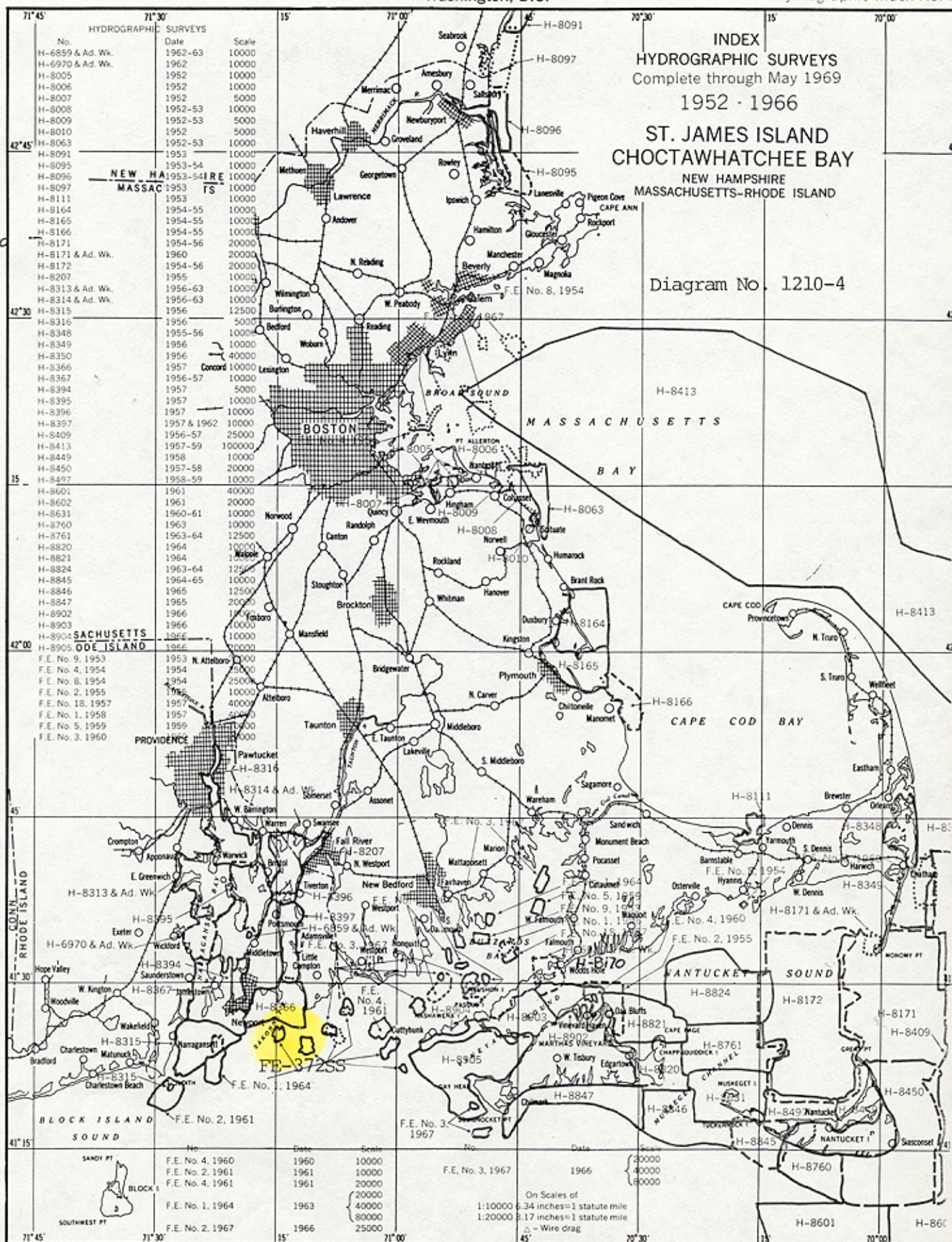
NAW 9/11/92

41° 25' 30"

FE-372SS
RHODE ISLAND
RHODE ISLAND SOUND
APPROACH TO SAKONNET RIVER
DATE OF SURVEY: 6 APR 1992 TO 7 APR 1992
SCALE: 1:5000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 2 OF 2
AWOIS ITEM NUMBER 7263

DEPARTMENT OF COMMERCE
Environmental Science Services Administration
U.S. Coast and Geodetic Survey
Washington, D.C.

Hydrographic Index No. 6



FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-372SS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

- [illegible]